

CLAIMS

1. A method for the formation of a radio frequency antenna of a
2 predetermined pattern on a surface area of a substrate which comprises
3 applying a metal layer to said substrate and thereafter removing that portion of
4 said metal layer which comprises all metal within said surface area on said
5 substrate other than metal of said metal layer disposed in said predetermined
6 pattern comprising said antenna.
2. A method as in Claim 1 wherein said substrate comprises a plurality of
2 said surface areas and removal of said portion of said metal layer comprises
3 removal within each of said surface areas, such that a plurality of said antennas
4 is formed with each antenna of said plurality being disposed within a respective
5 one of said surface areas.
3. A method as in Claim 2 further comprising subdividing said substrate into
2 a plurality of segments, each segment having contained thereon a single
3 antenna.
4. A method as in Claim 2 wherein at least two antennas of said plurality of
2 antennas are of different shapes.
5. A method as in Claim 2 wherein at least two antennas of said plurality of
2 antennas are of different metal thicknesses or densities.
6. A method as in Claim 1 wherein said antenna comprises at least two
2 portions, one of said portions having a density of metal different from another of
3 said portions.
7. A method as in Claim 1 wherein said substrate comprises a web material.

8. A method as in Claim 7 wherein said web material comprises film or
2 paper.
9. A method as in Claim 1 further comprising placing an image on said
2 substrate.
10. A method as in Claim 9 wherein said image is placed by printing or optical
2 image formation.
11. A method as in Claim 10 wherein placement comprises embossing,
2 casting or injection molding.
12. A method as in Claim 10 wherein said printing comprises flexographic,
2 offset, rotogravure, letter printing.
13. A method as in Claim 10 wherein said optical image formation comprises
2 formation of holographic, optical variable device, diffractive, dot-matrix,
computer-generated holographic or computer-generated optical images.
14. A method as in Claim 1 wherein metal is placed on both sides of said
2 substrate.
15. A method as in Claim 14 wherein said demetallization forms antennas on
2 both sides of said substrate.
16. A method as in Claim 15 wherein different types of antennas are formed
2 on each side of said substrate.
17. A method as in Claim 15 wherein the same type of antenna is formed on
2 each side of said substrate.

18. A method as in Claim 1 further comprising placing an image on said
2 antenna.
19. A method as in Claim 18 wherein said image is placed by optical image
2 formation.
20. A method as in Claim 19 wherein placement comprises embossing,
2 casting or injection molding.
21. A method as in Claim 19 wherein said optical image formation comprises
2 formation of holographic, optical variable device, diffractive, dot-matrix,
computer-generated holographic or computer-generated optical images.
22. A method as in Claim 1 further comprising subjecting said demetallized
2 web containing said antenna to a cold foil stamping process whereby said
antenna is transferred to a second web.
23. A method as in Claim 22 further comprising having registration indicia
2 placed on said substrate and said second web and passing said substrate
containing said demetallized antenna and said second web through a marrying
4 zone in registration.
24. A method as in Claim 23 wherein said registration is accomplished by
2 adjusting linear speed of either of said substrate or said second web relative to
the other.
25. A method as in Claim 24 wherein adjustment of said linear speed is
2 controlled by a microprocessor.
26. An RF antenna article formed according to the process of Claim 1.

27. An RF antenna article as in Claim 26 further comprising an RF antenna
2 formed on the surface of a substrate.
28. An RF antenna article as in Claim 27, further comprising a tag or label.
29. An RF antenna as in Claim 28 wherein said antenna has a thickness on
2 the order of <2% of the thickness of said tag or label.
30. An RF antenna as in Claim 29 wherein said antenna has a thickness on
2 the order of <1% of the thickness of said tag or label.